

**UNITED STATES DEPARTMENT OF COMMERCE****Patent and Trad mark Offic**

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/206,216 12/05/98 DATH

J F - 721

IM62/0618

FINA TECHNOLOGY, INC
JIM WHEELINGTON
P O BOX 410
DALLAS TX 75221

EXAMINER

NGUYEN, T

ART UNIT	PAPER NUMBER
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1764

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DATE MAILED:

06/18/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/206,216	Applicant(s) Dath et al.
	Examiner Tam Nguyen	Group Art Unit 1764

Responsive to communication(s) filed on Dec 5, 1998

This action is **FINAL**.

Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire three month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

Claim(s) 1-27 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

Claim(s) _____ is/are allowed.

Claim(s) 1-27 is/are rejected.

Claim(s) _____ is/are objected to.

Claims _____ are subject to restriction or election requirement.

Application Papers

See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

The drawing(s) filed on _____ is/are objected to by the Examiner.

The proposed drawing correction, filed on _____ is approved disapproved.

The specification is objected to by the Examiner.

The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

All Some* None of the CERTIFIED copies of the priority documents have been

received.

received in Application No. (Series Code/Serial Number) _____.

received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

Notice of References Cited, PTO-892

Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

Interview Summary, PTO-413

Notice of Draftsperson's Patent Drawing Review, PTO-948

Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION

Claim Rejections - 35 U.S.C. § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

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Claims 1-15 are rejected under 35 U.S.C. 103(a) as obvious over EP 0109060.

The EP 0109060 reference discloses a process of cracking a hydrocarbon feed which comprises olefins having 4 to 12 carbon atoms into propylene and some ethylene. The feed is contacted with an alumino-silicate having a crystalline and zeolitic structure and having a $\text{SiO}_2/\text{Al}_2\text{O}_3$ molar ratio equal to or greater than 350, at a temperature of from 400⁰ C to 600⁰ C, at a substantially atmospheric pressure, and at a space velocity of from 5 to 200 h^{-1} . The reference discloses that the feed is selected from a C₄ cut steam cracking unit and the feed contains naphtha (aromatic compounds such as BTX). (See page 1, lines 20-35; page 3, lines 18-40; page 5, lines 13-19; pages 6-7; claims 1-3)

Regarding claims 1 and 10, the EP 0109060 reference does not specifically disclose that the feedstock and the effluent have substantially the same olefin content by weight (± 15 wt %) therein as the feedstock. However, the reference's feedstock composition, catalyst, and the operating conditions are similar to the feedstock, catalyst and the operating conditions as claimed. Therefore, it would be expected that the reference feedstock and the product having substantially the same olefin content.

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Regarding claim 6, the reference does not disclose that the feedstock is selected from C₅ cut steam cracker. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the EP 0109060 process by having the feedstock from a source as claimed because the EP 0109060 feedstock is similar to the claimed feedstock and it would be expected that the results would be similar as long as the feedstock comprises a great amount of olefins (C₄ or C₅ cut) and small amount of naphtha.

Regarding claims 7 and 8, the reference does not disclose that the product contains at least 90% or 95% of C₂ and C₃ olefins. However, the EP 0109060 process is operated similar to the applicant process. Therefore, it would be expected that the EP 0109060 product stream would contain at least 90% or 95 % of C₂ and C₃ olefins.

Claims 16-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0109060 as applied to claims 1-15 above, and further in view of Cosyns et al. (5,306,852).

The EP 0109060 reference does not specifically disclose that the feed contains diene, and does not disclose the step of hydrogenation of diene.

Cosyns discloses a hydrogenation process in which a diolefin (or diene) containing hydrocarbon stream produced by steam cracking or other cracking processes is hydrogenation.

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The dienes are converted into mono-olefins by contacting with a hydrogenation catalyst. (See abstract)

Regarding claims 16, 17 and 20, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the EP 0109060 process by utilizing the Cosyns hydrogenation process before the cracking process because the Cosyns process will convert dienes to mono-olefins. This in turn would increase the production of mono-olefins and decrease the amount of diene to less than 0.1 wt% in the cracked feed.

Regarding claims 18, 19 and 20, Cosyns does not specifically disclose the LHSV of the feedstock and the hydrogenation operating conditions. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Cosyns process by utilizing the LHSV and the operating conditions as claimed because Cosyns utilizes a hydrogenation catalyst to convert dienes in a hydrocarbon stream, which is from the same sources as claimed, to mono-olefins. Therefore, it would be expected that the Cosyns process would operate at similar conditions to the claimed process.

Regarding claims 24-26, the EP 010960 reference does not specifically disclose the step of pre-treating catalyst by stream and de-aluminating so as to increase the silicon/aluminum ratio. However, it would have been obvious to one having ordinary skill in the art at the time the

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invention was made to have modified the EP 0109060 reference by pretreating the catalyst as claimed because the EP 019060 catalyst has the silicon/aluminum ratio as claimed.

Alternatively, claims 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 010960 and Cosyns et al. (5,306,852) as applied to claims 20-23 above, and further in view of Gajda et al. (5,522,984).

EP 010960 reference does not specifically disclose the step of pretreating catalyst by stream and de-aluminating so as to increase the silicon/aluminum ratio. However, Gajda discloses a de-aluminating process of a cracking catalyst by steaming the catalyst and then contacted the steamed catalyst with an aqueous solution. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the EP 010960 process by pre-treating the catalyst as taught by Gajda because the Gajda catalyst pretreating step will produce a catalyst having a desirable silicon/aluminum ratio. (See Gajda, col. 3, lines 13-19; col. 4, lines 43-49)

Conclusion

In the view of the foregoing, the claims have failed to patentably distinguish over the applied art.

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Any inquiry concerning this communication or earlier communication from the examiner should be directed to Tam Nguyen, whose telephone number is (703) 305-7715. The examiner can normally be reached on Monday-Thursday from 7:15 AM to 5:45 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Calderola, can be reached on (703) 305-6118. The fax phone number for this Group is (703) 305-3599.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.



Walter D. Griffin
Primary Examiner

T. M. Nguyen
June 15, 1999